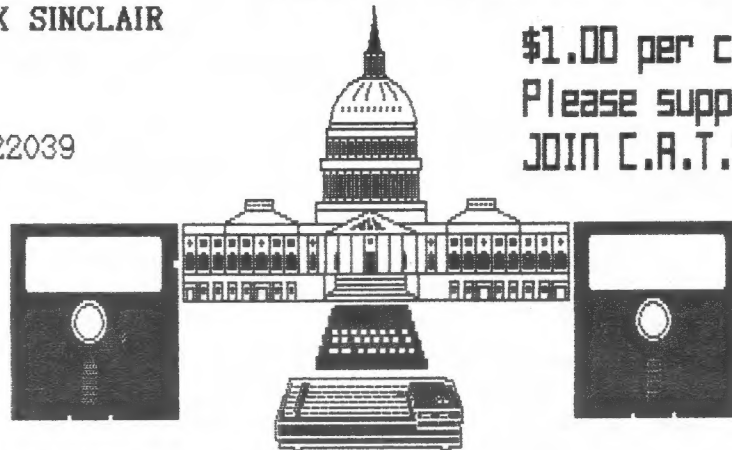


CATS NEWSLETTER

CAPITAL AREA TIMEX SINCLAIR
USERS GROUP
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VOLUME 6
NUMBER 4



AUGUST, 1988

HERE'S TOM

Tom Bent on Interfacing and Other Mysteries

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CONTRIBUTORS

Bill Barnhart	Vernon Smith
George Ray	Ruth Fegley
Mark Fisher	Pieter van Dijk
Mike Warmick	Tom Bent
Wilf Rigger	Fred Nachbaur
Mike Warmick	

PRESIDENTIAL RAMBLINGS

CATSFEST

You heard it here first (well, almost): CATS is planning to host a Fest May 6-7, 1989, right in beautiful New Carrollton! Mark your calendars and tell all your friends! A committee has been formed to oversee the FEST and work out the innumerable details. There is plenty room on the committee so feel free to sign on; see me, Tom Bent, Phil Russo, or other committee members at the meeting or drop me a line at the CATS P.O. box.

MEMBERSHIP SURVEY

I got a good response to the membership survey that was contained in last month's newsletter. But, to those 75 of you who did not turn them in, please bring them to the meeting or mail them to me. One of the things that I will do with them once I get a larger response is to develop a resource list of who has what hardware and software and is willing to provide assistance to other club members.

COMMITTEE OPPORTUNITIES

The following is a list of committee and other opportunities in CATS that can give you a chance to help the club in areas in which you have an interest and/or special skills. I had a very good response at last month's meeting, but for those of you who did not get a chance to sign up, please let me know which

ones you are interested in, either at the meeting or by mail. **PLEASE FEEL FREE TO SIGN UP FOR MORE THAN ONE!** The list (and I hope the titles are self-explanatory): membership, hardware sessions, software sessions, product reviews, other club newsletter reviews, CATS newsletter articles, greeter, computer fest tables, libraries, group buys, publicity, CATS Fest. If you have ideas for additional ones, please let me know! I know there are a lot of jokes about committees and their efforts (Question: What is a camel? Answer: A horse designed by a committee!), but I think that they can help the club focus in on many more areas of interest than the executive board or I have the time to, and it gives each member a chance to contribute to the club.

CONSTITUTIONAL CHANGES

The executive board has approved bringing before the membership for discussion and vote two amendments to the CATS constitution. One amendment would allow suggested amendments to be raised and voted on in the regular monthly general meetings. The second amendment would provide for an additional member-at-large seat on the executive board to be filled by the immediate past president of CATS.

Best close - I have probably rambled onto a second page by now. See you at the meeting.

FROM THE EDITOR

IT'S PICNIC TIME AGAIN

Did you make the "First Annual Picnic in the Park"? If you didn't, you can make the second. It will be on September 24th. Don't miss it!

TIPS AND TIDBITS

The program IBMCOPY is really slick. As you know, Hank is keeping his QL in the box until it's the only one left. In the meantime, he's wordprocessing on a MS-DOS machine. In the past that would have presented a problem. Now, with IBMCOPY, I copy his 5 1/4" disk to a ramdisk in the QL and then onto a 3 1/2" disk, almost as fast as it takes to describe the operation.

Have you seen the QL World ad for v1.2 Keyboard chips to replace the existing 8049? They are supposed to prevent the "rollover effect", the double letters that occur when you accidentally touch an adjacent key. I've tried them and they work perfectly.

If you're not into telecommunications, you should be. Letting "your modem do the walking" can open up a whole new world and a really fun way to use your computer. I predict that the Group will become more telecommunications oriented during the next year. Most likely Steve Greene will be our point man in this area. A CATS BBS will probably be a must for the CATSFest next year. Wouldn't it be nice to just upload your article to OUR local BBS and then have the Editor download it. Sort of like checking the CATS P.O. Box. More next month.

WHAT'S INSIDE

This month our President *emeritus*, Tom Bent, makes his debut with a column called Hardware Savvy. In it Tom will try to put on paper the many hardware mods that have been featured in the Hardware Workshops on Saturday mornings. Pieter van Dijk gives us some insights on the new Z88. To answer a question on using a monitor with the 1000, we are reprinting an old article by Mark Fisher. Mark also has an offering for the 2068 users on hand/eye coordination. This article was submitted several months ago but the disk "took a vacation", only to turn up several days ago! Sorry, Mark. George Rey is keeping us up to date on the happenings in his investment workshop.

After a long absence, Hank Dickson is back with us. This month he starts a rundown of the proceedings of last month's meeting on interfacing. We have Part 2 of Wilf Rigter and Fred Nachbaur's hi-res display article. Finally, in the Potpourri section there are two amendments to the Constitution that will be presented to the membership at the August meeting.

IN NEXT MONTH'S NEWSLETTER

Quantum Levels has given us permission to reprint an article by Fred Nachbaur which gives a detailed look at the inside of the QL. If you ever crack your case open (What a silly statement to make to a Sinclair group!), this article is a must. We will also finish the hi-res graphics article started in the July issue.

AUGUST MEETING AGENDA

11:00 Hardware Workshop
12:00 CYA Workshop
2:00 to 2:30 General
Meeting
2:30 to 3:30 Hardware
Interfacing by Tom Bent
3:30 to 4:30 Open discussion
4:30 Adjourn

NEWSLETTER SUBMISSIONS

Submissions for the newsletter can be in hard copy, with columns 3 1/2 inches wide or, preferably, magnetic media. For the QL, microdrive cartridge, 5 1/4" DS/DD or Quad density disks, or 3 1/2" disks. For the 2X81, TS1000, or 2068, cassettes only, with titles on the box.

Send material to:
Editor, CATS Newsletter
Box 467
Fairfax Station, VA 22039

CATS 2 AUGUST

POTPOURRI

News Around the Beltway

CYA WORKSHOP by George Rey

We are off on the yellow brick road to Cibola. The coming sessions will be hands-on workouts on inputting, manipulating, transferring, and copying each others data files.

This month Herb Schaaf will demonstrate how to develop moving averages (ma's) directly on Easel using data already loaded into the program. The procedure is not simple, but at least it is a start.

Mannie Quintero will do likewise, except he will demonstrate the use of Abacus to generate ma's which are then easily transported via an export file to the Easel program for printout or display of the basic data loaded and manipulated in Abacus to give their ma's.

George Rey will have a working QL with microdrives for use and will present and make available Interest Rate data (AAA Bonds and Federal Funds) for the past 18 months. He will display the format for data storage, transfer, etc. for the Abacus and Easel programs to keep us on the yellow brick road at equal speeds. His data will be available to interested parties for copying. So bring a blank microdrive if you want a copy of the data.

ADVERTISING INFORMATION

C.R.T.S. will run one free 1/4 page "commercial" ad per one year full (\$18) membership. Non-commercial ads may be submitted at any time. Publication dates for both types will be determined by the newsletter editor.

Advertising Rates

Full page \$25; 1/2 page \$15;
1/4 page \$10; 2" x 2 1/2" \$7

CONSTITUTION CHANGES TO BE PRESENTED

At its July meeting the Executive Board voted to present the following changes to the Membership at the August meeting.

Amend Article Four, Section Three to read as follows:

The elected officers, the immediate past President, the Newsletter Editor, and the three Members-at-large shall constitute the Executive Board.

Change Article Ten to read as follows:

This Constitution may be amended by raising the issue with the Executive Board or from the floor at any General meeting. If the Board supports the change by its majority vote. The proposal shall be printed in the Newsletter and presented at the next General meeting.

ADD the underlined text and DELETE the text printed in inverse.

MEMBERSHIP CORNER

Renewals:

Ian Robertson
Dave Klinkhamer
John O'Brien

Address change:

Joe Miller
1704 Dayton Road
Hyattsville, MD 20783
301/559-7926

QL on the QT

by Vernon Smith

The opinions expressed in this column are those of the writer and not those of CATS or its Executive Committee. -EDITOR

SNUG, in case you didn't know stands for the Sinclair Northamerica Users Group. Ah, that's just what we need, another users group. But wait a minute, this one's different as it will be a forum for exchange of ideas. (As if existing groups didn't.) It will be an umbrella organization with regions to tie in with established groups. Confused? Well, maybe it will help if I tell you what it isn't. "It is the intent of the organizers NOT to infringe or supersede any already established User Group..." I'm not kidding folks, that was a direct quote from their flyer. "It is intended to show some strength to the industry that Sinclair is not dead, and that the mere fact that we can get this Organization together will prove that we can stick together and grow and prosper." Are you still confused? I am. I hate to rain on anyone's parade but someone has got to inject a dose of economic reality into the matter at hand. First, Sinclair is dead. The 2068 died when Timex pulled the plug and the QL expired when Uncle Clive sold out to Alan Sugar. I don't care if every TS owner stood shoulder to shoulder, there isn't a vendor who'd drop his MS-DOS project and take on a Sinclair based one. Production lines are not going to start disgorging 2068s or QLs. Even more basically, they are not making the heart of the 2068, the SCLD, or that of the QL, the ZX8301, anymore. We are in a survival mode, pure and simple. We need info to do so. Let's face it, there are a handful of hardware vendors and software developers concentrating on Sinclair and a show of Sinclair strength (probably an oxymoron) to them is nothing but preaching to the choir. Furthermore, to say the new group

won't infringe any established user group is absurd. It can't help but infringe on EVERY user group since each group, from the successful to those not so, competes for scarce resources, members. Many have a set amount of money they can spend on user group dues, subscriptions, etc. and to join something new they have to give up something old.

My opposition to SNUG is in its packaging and not with the concept of a national user group. I also think that many of the organizing principals are unworkable. Take "establishing standards". I feel that those existing vendors of hardware and software could establish standards in an afternoon, if they really thought it was worthwhile. As to the establishing an organization with various regions, lots of luck. SNUG would be successful in areas with no group or where the existing group was weak, but where there was a strong one there would be absolutely no incentive to join with a national body and lose local control. Without all of North America, the concept just won't work. Calendar coordination might be a good thing but certainly not worth starting up a group to do. Besides, its being done, after the fact, right now. So, what should SNUG do? Try to be a full service user group. Forget all of the feel good objectives. Publish a newsletter, sell memberships, build a tape library, and arrange group buys. Forget the regional concept and go straight to the individual. Perish the thought, but let the marketplace decide. If the product is perceived to be worthwhile, people will join.

What's new on the software scene? Sector Software has just introduced WriteTurn, which turns spreadsheets 90°, similar to Sideways. I feel that it has several fatal flaws, which render it nearly useless. Next month I will be reviewing it at length. Till then..

USING EYES AND FINGERS

A program for the 2068 by Mark Fisher

Here's a game I find to be entertaining, which may also be beneficial. I work with an Optometrist at a clinic that deals with children with learning difficulties. One of our avenues of approach is to develop visual skills. There are a number of visual skills that can be isolated, but one of the easiest to apply to the TV screen is tracking.

Tracking is the ability to move your eyes smoothly and precisely. This is necessary for fast and stress-free reading. It isn't an inborn trait, and all people are not equal. It can be improved with practice, however. If you look at the eyes of someone that's trying to follow an erratic target, you may find that they move their eyes in large jumps, then correct their gaze if the target stops. They won't notice it, probably - after all, it's still visible in their peripheral vision at all times, but peripheral vision isn't as acute as central vision. I'll discuss this in a little more detail in the last section.

Operation of the program

First of all, some notes on the syntax. If you're used to Microsoft BASIC, some of the expressions may be unfamiliar. I hope my text discussion will be enough to let you generate appropriate code for your machine, but there are a few points to know. 1) For the Sinclair, S\$(x) will select the x'th letter from S\$ (similar to Mid\$()). In addition, the first letter in the string is #1, not #0. 2) Logical operators yield 0 for false and +1 for true (not -1). This is important in line 250.

There are four parts to the program. First, titles and explanation of the program - self explanatory. One variable is set up at this point, Maxspd, to keep track of the best effort produced during one setting.

Second, initial setup accepts the string of keys that you wish to use as tracking targets. It then does some error checking (lines 120 - 150), and proceeds to setup the other variables needed for operation. Xmax and Ymax (lines 160 & 170) apply to your screen size - if you're using a 64 or 80 column screen, you can easily change them to suit. Spd (line 180) is the limiter for the random direction generator

in the next section, while T and OT track your performance, and are available to modify Spd.

Third, the "Letter Loop", controlled by 'j', sets up the actual speed and direction each letter will take. It also provides a flash effect to acknowledge correct hits. Line 250 modifies Spd, in- or de-creasing it depending on your speed in touching the correct key. Lastly, line 290 selects which letter in your string will be the target.

The last section is really a sub-routine within Letter Loop. It governs the actual movement across the screen in lines 310 and 320. If the edge of the screen is reached, direction is reflected back. Lines 340 to 370 interpret your keystrokes as you attempt to hit the correct key. If you press the wrong key, the target letter is changed again, and line 290 ensures that the key you are pressing isn't used. If you press nothing, the letter continues to move (line 360). If you're correct, line 370 sends you back for a new letter and direction, unless, of course, you've used up all 20 hits.

Playing the game

For most visual demand, try to get your head closer to the screen than usual - so that your eyes must swing across 20 or 30 degrees, rather than the usual five. Try to leave your neck relaxed, and use your eyes to track the letter. As it speeds up, you'll find you need to be looking right at the target before you can tell which letter it is.

Most of all, have fun. If you're trying to learn the keyboard, this program will help with that as well.

```
10 PAPER 0: INK 7: BORDER 2: CLS
20 PRINT AT 5,5;"Using your";AT 7,10;"E Y E S";AT 9,14;"&";
AT 11,16;"FINGERS"
Mark Fisher 1988"
30 INPUT "MAKE BACKUP COPY? (y/ent)";q$: IF q$="y" THEN GO
TO 9000
40 CLS : PRINT "Please ENTER a string of letters from the ke
yboard.""
50 PRINT "The letters you ENTER will move about the sc
reen (one at a time).""See how fast you can type the mat
ching key."
60 PRINT "Try to relax your neck, & follow the apparent mot
ion of the letter with your eyes."
80 PAUSE 0: CLS
90 LET maxspd=1
```

Program listing continued on Page 8

THE Z88 COMPUTER

Experience of a user by Pieter van Dijk

Since I bought my QL computer I have been using it in an ever increasing way for my job. In the beginning, I used ARCHIVE and EASEL but gradually my requirements exceeded the possibilities of these programs. I needed to make rather complicated technical calculations and I started to program in Superbasic and copied the programs for increased speed. More and more I used a plotter for graphic output. For my present job I have to produce Quality Control reports, with statistical calculations on data and lots of graphs (averages, moving averages, standard deviations, etc.). The input is done on a daily basis and I started using Lotus on the IBM on the job. Statistical calculations are easy in Lotus but plotter output is something else. Therefore I wanted to have the data on my QL at home. However I did not succeed in transferring the data from Lotus files to my QL, so at night I typed them in a second time. I wrote a Superbasic program for plotter output and used that for graphic reports. When the Z88 became available it seemed to be the answer to my needs and I bought one. Since then I have used it mainly for technical programs in Basic, and what follows is my present experience.

BACKUPS

If large programs are used or large data files, a lot of RAM memory is necessary. At present I have 128K additional memory, but I run out of room sometimes. The 0.5 MB RAM cartridge is not available yet, but I have one on order. For safety reasons, backups are required to disk. The commercial program available for transfer to and from the QL (Sector Software's QZ) did not work properly with my QL. (Some of the data was garbled in every file I tried.) According to the experts (Tom B.) this may be a bad SER port on the QL. After some experimenting with the built-in Terminal hooked up to the Terminal program from the QUANTA Library (QL52), I discovered that I needed a small delay between sending each character. When I used the smallest delay in this program, everything went well. With this knowledge, I wrote a simple Superbasic program that includes

PAUSE 1 after transmittal or receipt of each character. This program is run on the QL with the Import/Export program on the Z88 and works fine (but rather slow).

BASIC

The Z88 has BBC-Basic as its built-in Basic interpreter. This dialect of Basic is reasonably close to Superbasic and it has Procedures and Functions similar to Superbasic. The Z88 manual does not contain much more than a list of commands with some explanation. I obtained an old book for the BBC and this was of some help. A lot of BBC commands, however, do not work on the Z88 and I am learning to use the language by trial and error. By now I have succeeded to translate several programs and they are now running on the Z88.

PROGRAMMING

For unknown reasons the interpreter does not have a line editor so if a Basic line needs modification you have to type in the complete line again! It is possible to write a program in the built-in word-processor and use a special method to load it into Basic, but this is a rather long-winded process. Because of the small screen (8 lines) the overview is somewhat lost when writing or modifying programs. My approach is to write or modify a program on the QL, with EDITOR, and use this program also to change syntax automatically. When the program is ready it is transferred to the Z88 and the file loaded into the interpreter through the wordprocessor. Because Basic files are stored in tokenised format, direct loading of files is not possible the first time. On the other hand, saving and loading programs in Basic is nearly instantaneous. Number data files from Basic are also tokenised and if they have to be readable, translation into character files is necessary. I wrote a simple program for coding/ decoding. It reads a tokenised number from one file and writes it to another file in character format. (Input IN% or IN, output STR\$(IN)) or vice versa.

PRINTING and PLOTTING

Until now I have not been able to find a Basic command that can be used to start

Continued on page 7

printing or plotting. Print#C or LPRINT do not work and the commands used for the BBC computer result only in "Bad Command" messages. Fortunately the Z88 has a built-in printer spooler that can be started and stopped while running a program. The spooler sends all screen output to the serial port so the printer or plotter data has to pass the screen and this slows the process, but it works fine.

MODEM

The terminal program works satisfactorily with my modem. It took some experimenting with the settings (parity, etc.) but with Compuserve and some Bulletin Boards my Z88 works better than the QL (again the SER port?).

INTERFACE

The Z88 has one serial port to be used for all communications. As usual, the commercially available cables are expensive, and can be made cheaper from standard components. Again some experimenting and expert help was required, but now I have cables for:

1. QL connection (SER2 British)
2. MODEM connection (RS232)
3. PRINTER/PLOTTER (with Miracle QL Parallel Interface!)

Now that my Quality Control program is working on the Z88, I do the input on the job and use the printer in the office or my own one at home. The built-in printer driver did not need any modification and worked 100% for both printers. Plotter output works also with the driver, but a small modification had to be made in the program to avoid long output strings (>256 characters?) being split up by the driver.

CONCLUSION

More documentation is required for the use of Basic. Hopefully this will start to appear soon in the special Z88 magazine and the Advanced User Guide that is promised for the near future. Working with the application programs is simple and switching between the applications is very simple (as ctrl/c on the QL). A lot of application programs are available (Diary, Alarm, Calculator, Terminal, etc.) and Pipe-dream, the integrated Wordprocessor, Spreadsheet and Database is a simple to use and versatile program.

For serious applications additional memory is required which will bring the price up to \$600-\$850 for a workable system. This is not the price for a toy, but if real portability is required, this is the one to get!

NOTE. If there is interest in more information on the use of the Z88, let me know and I will write some more on items not covered here.

EXECUTIVE RUMBLINGS

7-19-88

I'd like to give you an outline of what your Executive officers have been doing (behind your back). Here's what went on at the last Executive Board meeting:

For you picnickers, we'll meet on Sept. 24th, in the Laurel picnic area in Greenbelt Park.

T-Shirts or sports shirts, that's the question. Or maybe both. We've been looking at the idea of the culb selling blue and red t-shirts at the Computer Fest.

I used that "F" word, Fest!! Well, as I've been told that Computer Fest is copyrighted, maybe you can come up with a name for ours (like CATSFest).

Now back to the Fest. Ours will take place next May 13th & 14th in the D.C. area. Further details as the committee works them out.

September 11th we'll have a table at the Gaithersburg Ham-Fest. Be there.

The Q & A that Tom did at the last meeting may become a monthly thing, with most of it going to the newsletter. We haven't forgotten the readers that can't attend the meetings, so write the newsletter with your Q&As, so they can be printed.

Our new Members-at-Large are:

- Tom Bent
- Mark Fisher
- Bob Curnutt
- +Vernon Smith as THE Editor.

Two amendments to the Constitution were passed by the Board for submission at the General meeting. See Page 3 for texts.

Mike Warmick
Secretary

CATS 7 AUGUST

HARDWARE SAVVY modifications and maintenance tips for the Sinclair family of computers by Tom Bent

Many people have requested this column, for a wide variety of reasons. Mainly, I believe, to finally document what we are doing on the fly in the hardware sessions.

I hope to put in print ALL of the modifications that we have done. We will start with some more recent mods; however, we will also reprint older mods that have been previously published in this or other magazines.

We have been heavily modifying the QL's of late. Some of these mods directly apply to the 2068 and 1000, because they are indeed generic mods. Others are specific to the particular equipment at hand.

One of the biggest problems that I have seen is after you open your QL or 1000 (fortunately the 2068 is spared this problem), on re-installing the keyboard membrane, it cracks. (Sound familiar?)

Upon opening your QL or 1000 and lifting the top away from the base of the machine, the keyboard membrane will pull tight. Grabbing the full width of the membrane and pulling straight up smoothly will remove it from the motherboard connector.

The trick is re-installing it without it kinking.

First, notice that the black mating connector rises up from the PC board and is firmly soldered down. Note also that the mating connectors are flexible in that they will sway back and forth if you put a side load on them.

In order to re-insert the ribbon without cracking it, you must use both thumbs and index fingers, grab the full width of the ribbon AND mating connector simultaneously. This requires that you grab the ribbon at the **BOTTOM** and slither your fingers down the outside of the mating connectors. Note that you can't physically bend the ribbon, let alone crack it.

If you do find your ribbon cracked, then get out your handy dandy scissors and cut it off at the crack. Try again. Remember to

install the widest one first, as this is the trickiest. Avoid kinking your ribbon at all cost. You can't tell whether it is working until you close up your machine. It is just maddening to have to reopen your computer and trouble shoot a small crack.

In general, if you have a grouping of keys that don't work, either across a row or down a column, then expect to require a keyboard reworking. Next month we will give you a reason to open up your keyboard.

```
100 REM *** Initial setup *****
110 INPUT "Type Keys you want to use, then press ENTER:" s$
120 IF LEN s$ < 2 THEN CLS : PRINT s$ "Two letters or more please.": GO TO 100
130 LET k$="": LET len=LEN s$
140 FOR i=1 TO len-1: FOR j=i+1 TO len: IF s$(i)=s$(j) THEN CLS : PRINT s$ "All different please.": GO TO 100
150 NEXT j: NEXT i
160 LET xmax=31: LET x=xmax/2: LET ox=x
170 LET ymax=21: LET y=ymax/2: LET oy=y
180 LET spd=1: LET t=0: LET ot=t
200 REM ***** Letter Loop *****
210 FOR j=1 TO 20: REM Number of "hits" needed to finish game
220 LET dx=RND*spd-(spd/2)
230 LET dy=RND*spd-(spd/2)
240 FOR i=7 TO 2 STEP -1: BORDER i: PAUSE 5: NEXT i: REM flash effect
250 LET spd=spd+3*(t<ot)-((t>ot) AND (spd>1)): LET ot=t: LET t=0
260 PRINT #1; AT 0,0; "Current score = "; INT spd; " Previous best score = "; maxspd
270 IF spd>maxspd THEN LET maxspd=spd
280 LET colr=INT (RND*6)
290 LET pos=INT (RND*len+1): IF s$(pos)=k$ THEN GO TO 290
300 REM ***** Movement loop *****
310 LET x=x+dx: IF x>xmax OR x<0 THEN LET dx=-dx: LET x=ox
320 LET y=y+dy: IF y>ymax OR y<0 THEN LET dy=-dy: LET y=oy
330 PAPER colr: PRINT AT oy,ox; " ": PAPER 0: PRINT AT y,x;s$(pos): LET ox=x: LET oy=y
340 LET k$=INKEY$: LET t=t+1
350 IF k$<>" " AND k$<>s$(pos) THEN GO TO 290
360 IF k$="" THEN GO TO 300
370 NEXT j
380 PAPER 0: PRINT AT 10,9; " Try Again ? "
390 PAUSE 0: PRINT AT 10,9; "          ": GO TO 100
8010 STOP
9000 REM *** Save to disk ***
9010 CLEAR : OUT 244,1: CLS : PRINT AT 10,0; "MAKING DISK BACK UP": MOVE "Eyes2.BAS",1
9020 GO TO 1
```


DRIVING A MONITOR

From the TS 1000 by Mark Fisher

Originally printed in the April, 1985 CATS N/L

A "golden oldie" from the CATS Archives. This is being reprinted in response to a question from last month's "Ask Manny Show".--Editor

The T/S 1000 was designed to produce useable results on a standard TV. Its display was limited to 32 character lines, partly to ensure that the letters were still legible. They are larger, but if you spend a lot of time in front of the set, the blurriness of the standard TV screen can be wearing. The fault lies in the circuits of the receiver. A standard TV is designed to create a pleasing image from 6 feet - while at 18 inches, the features are often blurred.

A monitor, on the other hand, has been designed to produce a crisp image up close. Unfortunately, the average monitor requires a different signal than a standard TV, and the 1000 does not offer a suitable output. Like many other things with this machine, this can be changed! The correct signal is present, but is too weak to drive a monitor. The mod involves making three solder connections within the machine, to add a one transistor amplifier for the signal.

The Mod...

Materials required are:

2N222 Transistor (Radio Shack sells these, but theirs are of variable quality. A Motorola version will have a higher gain and a crisper output than the average Radio Shack specimen.)

33 Ω , 1/4 watt resistor

100 Ω , 1/4 watt resistor

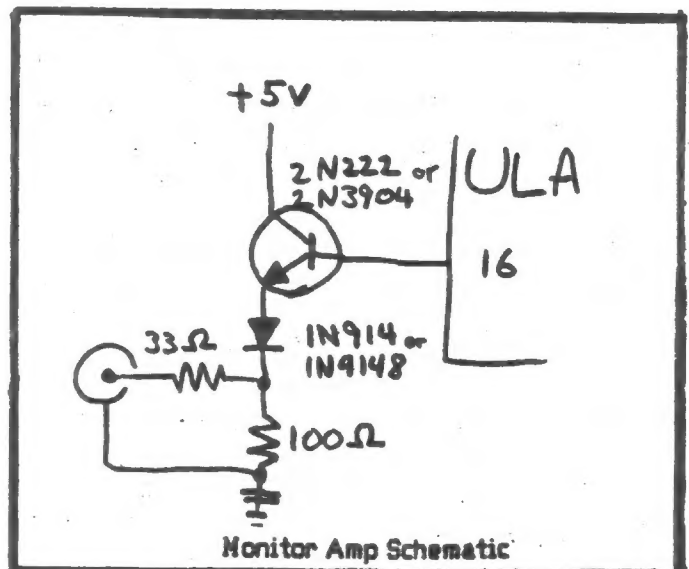
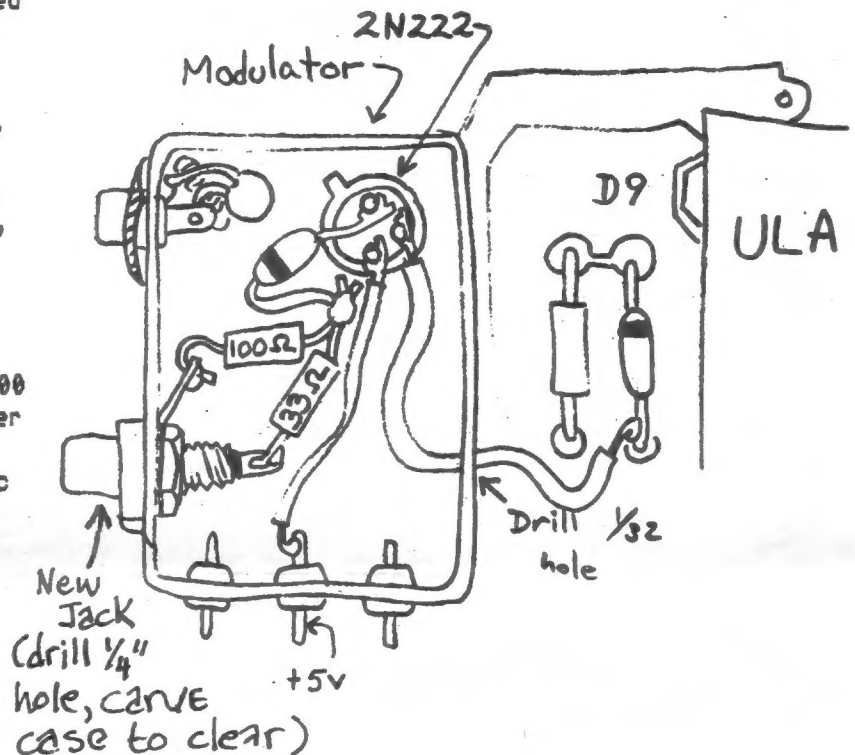
IN914 glass diode. Don't worry about the precise part number - all those little fellers are about the same.

A panel mount RCA Jack (ex. Radio Shack 274-346)

The circuit can be put almost anywhere. There is room to fit it inside the modulator without affecting its operation, thus leaving an uncluttered machine, & the option of either TV or monitor output. It involves drilling holes very near to some resistors in the modulator, but I think that the results are worth it.

To install the circuit, first remove the ULA and Z80 chips, and store them in aluminum foil (to protect against static electricity). Next,

carefully drill the 1/4" hole for the jack, and the 1/16 hole for the signal line. Solder up the assembly outside the case, and install it, being careful not to leave any solder where it shouldn't be. Carve the case to fit the new jack, insert the chips, and enjoy!



WRX16 Part 2 by Wilf Rigter and Fred Nachbaur

continued from the July, 1988 issue and to be included in the September newsletter. Originally printed in the ZX-Appeal, Vancouver Sinclair Users Group, April and May, 1988

LISTING 1:
WX16 CORE V2.1, CODE DISASSEMBLY DRIVER CODE

DUMMY DISPLAY FILE

```

addr  HEXCODE  NAME  MNEMONIC
-----
4082  ED4F        DUMY  LD R,A
4084  00          NOP
4085  00          NOP
4086  00          NOP
4087  00          NOP
4088  00          NOP
4089  00          NOP
408A  00          NOP
408B  00          NOP
408C  00          NOP
408D  00          NOP
408E  00          NOP
408F  00          NOP
4090  00          NOP
4091  00          NOP
4092  00          NOP
4093  00          NOP
4094  00          NOP
4095  00          NOP
4096  00          NOP
4097  00          NOP
4098  00          NOP
4099  00          NOP
409A  00          NOP
409B  00          NOP
409C  00          NOP
409D  00          NOP
409E  00          NOP
409F  00          NOP
40A0  00          NOP
40A1  00          NOP
40A2  00          NOP
40A3  00          NOP
40A4  DDE9        JP  (IX)
    
```

```

40A6-F3        DPLY  D1
40A7 3E07        TILO  LD A,07
40A9 47          TILO  LD B,A
40AA 00          DP-0  NOP
40AB 10FD        D.JN: DP-0
40AD C6EF        TILO  ADD A,EF
40AF 3C          DP-A  INC A
40B0 20FD        JR NZ DP-A
40B2 0680        LD B,80
40B4 112000      DELY  LD DE,0020
40B7 210020      LD HL,HRD1
40BA DD21C040    LD IX,DP-1
40BE 1808        JR DP-2
40C0 112000      DP-1  LD DE,0020
40C3 05          DEC B
40C4 CACF40      JP 2 DP-3
40C7 19          ADD HL,DE
40C8 7C          DP-2  LD A,H
40C9 ED47        LD J,A
40CB 7D          LD A,L
40CC C382C0      JP C0B2
40CF ED52        DP-3  SBC HL,DE
40D1 ED52        DELY  SBC HL,DE
40D3 23          DELY  INC HL
40D4 2A0C40      LD HL,(DFIL)
40D7 11F782      LD DE,B2F7
40DA 19          ADD HL,DE
40DB 3E1E        LD A,1E
40DD ED47        LD I,A
40DF 3EF5        LD A,F5
40E1 010702      LD BC,0207
40E4 C06502      CALL DP-5
40E7 C09202      CALL MRGN
40EA CD2002      CALL DEND
40ED DD21A640    LD IX,DPLY
40F1 C3A402      JP POPS
40F4 DD21A640    HRES  LD IX,DPLY
40F8 C9          RET
40F9 3E1E        NRML  LD A,1E
40FB ED47        LD I,A
40FD DD218102    LD IX,0281
4101 C9          RET
    
```

```

4115 228D40      STOR  LD (BIT0),HL
4118 C0A841      HRES  CALL 41AB
411B DD21A640    LD IX,DPLY
411F C9          RET
4120 C0AB41      NRML  CALL 41AB
4123 DD218102    LD IX,0281
4127 C9          RET
4128 00          NOP
4129 210020      CLS1  LD HL,HAG1
412C 1603        JR CLS*
412E 210030      CLS2  LD HL,HRD2
4131 010010      CLS*  LD BC,1000
4134 3400        LD (HL),00
4136 08          FILL  DEC BC
4137 54          LD D,H
4138 5D          LD E,L
4139 13          INC DE
413A E0B0        LDIR
413C C9          RET
413D 218440      RVRS  LD HL,C011
4140 012000      LD BC,0020
4143 7E          LD A,(HL)
4144 C4B0        ADD A,E0
4146 77          LD (HL),A
4147 18ED        JR FILL
4149 2420        PLT1  LD H,20
414B 1816        JR PLOT
414D 2430        PLT2  LD H,30
414F 1812        JR PLOT
4151 C04941      PLI2  CALL PLT1
4154 18F7        JR PLT2
4156 2420        UPL1  LD H,20
4158 180F        JR UNPL
415A 2430        UPL2  LD H,30
415C 1808        JR UNPL
415E C05441      UPI2  CALL UPL1
4161 18F7        JR UPL2
4163 F0C38D6     PLOT  SET 2,(CDFG)
4167 1804        JR PLT*
4169-F0C38B95   UNPL  RES 2,(CDFG)
416D ED483440    PLT*  LD BC,(COORD)
4171 3E80        LD A,B0
4173 30          DEC A
4174 90          SUB B
4175 DAADDE      JP C ERRB
4178 57          GADR  LD D,A
4179 59          LD E,C
417A CB3A        SRL D
417C CB1B        RR E
417E CB3A        SRL D
4180 CB1B        RR E
4182 CB3A        SRL D
4184 CB1B        RR E
4186 2E00        LD L,00
4188 19          ADD HL,DE
4189 56          LD D,(HL)
418A 79          LD A,C
418B E607        AND 07
418D 3C          INC A
418E 010008      BTLP  LD BC,0800
4191 C802        JR L RSBT
4193 C811        RL C
4195 3D          DEC A
4196 200C        JR NZ 41A4
4198 F0C3856     BIT 2,(CDFG)
419C 2804        JR Z RSBT
419E C8C1        STBT  SET 0,C
41A0 1802        JR 41A4
41A2 C8B1        RSBT  RES 0,C
41A4 10E8        DJNZ BTLP
41A6 71          LD (HL),C
41A7 C9          RET
41A8 CD2B0F      CALL SLOW
41AB FD4634      LD B,(FRMS)
41AE 3A3440      LD A,(FRMS)
41B1 88          CP B
41B2 28FA        JR 2 41AE
41B4 3E1E        LD A,1E
41B6 ED47        LD I,A
41B8 C9          RET
    
```

LISTING 4 BI-PLOT BASIC

```

5 REM WRX16-V2D DUAL HIRES
10 LET HR1=16648
11 LET HR2=16633
12 LET HR12=16638
13 LET HRES=16664
14 LET NRML=16672
15 LET CLS1=16681
16 LET CLS2=16686
17 LET RVRS=16701
18 LET PLT1=16713
19 LET PLT2=16717
20 LET PLI2=16721
21 LET UPL1=16726
22 LET UPL2=16730
23 LET UPI2=16734
24 LET XP=16438
25 LET YP=16439
30 REM LO-RES AXES
350 FOR I=0 TO 63
360 PLOT I,12
370 PLOT I,27
375 IF I>12 AND I<43 THEN PLOT 0,I
380 NEXT I
390 REM PLOT CURVES
395 REM FISINE CURVE
400 LET A$=" SIN (H*PI/40)"
405 REM F2:DECAYING EXPONENTIAL
410 LET B$=" EXP (-H/80)"
415 FOR H=0 TO 251
420 LET Z1=VAL A$
425 LET Z2=VAL B$
430 POKE XP,H+4
435 REM FUNCTION NO. 1 (DF 1)
440 POKE YP,63+60+Z1
445 RAND USR PLT1
450 REM FUNCTION NO.2 (DF 2)
455 POKE YP,63+60+Z2
460 RAND USR PLT2
465 REM FCTN.1 * FCTN.2 (BOTH)
470 POKE YP,63+60+Z1+Z2
475 RAND USR PLI2
480 REM LO-RES PLOTTING
485 PLOT INT (H/4)+1,27+15+Z1
490 PLOT INT (H/4)+1,27+15+Z2
495 PLOT INT (H/4)+1,27+15+Z1+Z2
520 NEXT H
525 POKE 16418,0
590 PRINT AT 17,0;
593 PRINT "*****"
594 PRINT "1: DISPLAY DF1 2: DISPLAY DF2;"
595 PRINT "3: DISPLAY BOTH DISPLAY FILES;"
596 PRINT "4: REVERSE HIGH - RES DISPLAYS;"
597 PRINT "5: RETURN TO NORMAL LR DISPLAY;"
598 PRINT "6: QUIT TO BASIC;" TAB 31;"
599 PRINT "*****"
600 RAND USR HR12
610 IF INKEY$="" THEN GOTO 610
620 LET Z$=INKEY$
630 IF Z$="" THEN GOTO 620
640 IF Z$="1" THEN RAND USR HR1
650 IF Z$="2" THEN RAND USR HR2
660 IF Z$="3" THEN RAND USR HR12
670 IF Z$="4" THEN RAND USR RVRS
680 IF Z$="5" THEN RAND USR NRML
690 IF Z$="6" THEN GOTO 610
700 RAND USR NRML
710 STOP
9998 LET S$="BIPL0T-DEMO"
9999 SAVE S$
9996 PRINT "PLEASE WAIT ABOUT 75 SECONDS...."
9997 PAUSE 200
9998 CLS
9999 RUN
    
```

LISTING 2: MACHINE-CODE LOADER

```

9000 REM LOADER
9010 FAST
9020 CLS
9030 PRINT "START? ";
9040 INPUT ST
9050 PRINT ST,"BYTES? ";
9060 INPUT BY
9070 PRINT BY
9080 FOR N=ST TO ST+BY-1
9090 INPUT V
9100 POKE N,V
9110 PRINT ("STR*(V+1000))(2 TO)");
9120 NEXT N
    
```

LISTING 3 BI-PLOT H.L. routine

```

40A6-F3        DPLY  D1
40A7 3E07        TILO  LD A,07
40A9 47          TILO  LD B,A
40AA 00          DP-0  NOP
40AB 10FD        D.JN: DP-0
40AD C6EF        TILO  ADD A,EF
40AF 3C          DP-A  INC A
40B0 20FD        JR NZ DP-A
40B2 0680        LD B,80
40B4 112000      DELY  LD DE,0020
40B7 210020      LD HL,HRD1
40BA DD21C040    LD IX,DP-1
40BE 1808        JR DP-2
40C0 112000      DP-1  LD DE,0020
40C3 05          DEC B
40C4 CACF40      JP 2 DP-3
40C7 19          ADD HL,DE
40C8 7C          DP-2  LD A,H
40C9 ED47        LD J,A
40CB 7D          LD A,L
40CC C382C0      JP C0B2
40CF ED52        DP-3  SBC HL,DE
40D1 ED52        DELY  SBC HL,DE
40D3 23          DELY  INC HL
40D4 2A0C40      LD HL,(DFIL)
40D7 11F782      LD DE,B2F7
40DA 19          ADD HL,DE
40DB 3E1E        LD A,1E
40DD ED47        LD I,A
40DF 3EF5        LD A,F5
40E1 010702      LD BC,0207
40E4 C06502      CALL DP-5
40E7 C09202      CALL MRGN
40EA CD2002      CALL DEND
40ED DD21A640    LD IX,DPLY
40F1 C3A402      JP POPS
40F4 DD21A640    HRES  LD IX,DPLY
40F8 C9          RET
40F9 3E1E        NRML  LD A,1E
40FB ED47        LD I,A
40FD DD218102    LD IX,0281
4101 C9          RET
    
```

```

40D3 19          ADD HL,DE
40D4 7C          DP-2  LD A,H
40D5 ED47        LD I,A
40D7 7D          LD A,L
40D8 C382C0      JP C0B2
40DB 3C          DP-3  SBC HL,DE
40DD ED52        SBC HL,DE
40DF 23          INC HL
40E0 2A0C40      LD HL,(DFIL)
40E3 113182      LD DE,8231
40E6 19          ADD HL,DE
40E7 3E1E        LD A,1E
40E9 ED47        LD I,A
40EB 3EF5        LD A,F5
40ED 010708      LD BC,0807
40F0 C06502      CALL 0285
40F3 CD9202      CALL 0292
40F6 CD2002      CALL 0220
40F9 DD21A640    LD IX,DPLY
40FD C3A402      JP POPS
4108-213E00     DPL1  LD HL,003E
4108 1808        JR STOR
410D 215E01     DPL2  LD HL,LDA1
4110 1803        JR STOR
4112 21E601     DPL2  LD HL,01E6
    
```

CLASSIFIED ADS

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Silver Reed EX34 typewriter/
daisy wheel printer \$160
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WANTED

Uncle John Wants You!

HERE'S THE CHANCE TO DO SOMETHING
FOR THE GROUP

John Riley, our Tape Librarian,
is trying to assemble a tape of
Astronomy programs. He needs
volunteer(s) to key in some of
the programs. Contact him direc-
tly or through the CATS P.O. box.

MANNY'S Q AND A SESSION

Proceedings from the last meeting

Transcribed and edited by Hank Dickson

Featured at the July CATS meeting was
a question-and-answer "rap" session orga-
nized and run by our own MANNY QUINTERO.

The venture proved to be highly
successful. Audience attention was rapt
and participation was free-wheeling. For a
reprise, CATS is asking that even more
questions be submitted to Manny via the
group's grapevine:

CATS -- "Ask Manny"
P.O. Box 467
Fairfax Station, VA 22039

Hopefully the subscribers and recip-
ients of this publication's exchange copies
around the country will be able to partic-
ipate, as well.

INTRODUCTORY REMARKS

For openers, Manny said his was to be
a hardware session, hardware being: ham-
mers, nails, pliers, modems, and such.

But the definition of the day was:
What is an interface?

Manny's answer: whatever is called
for when it comes to the electronics,
wires, connectors, software and know-how

necessary to get two pieces of equipment
connected in order to do something useful
with them.

AND the money to buy the above.

Some discussion followed about serial
vs. parallel printers. Manny used the
analogy of blowing marbles across a street
using a pipe the diameter of a single
marble (serial). This was contrasted with
an oblong pipe capable of holding eight
marbles in a row (parallel).

Interfacing involves getting bits from
one place to another.

RS-232 is a standard describing the
serial movement of bits between two devi-
ces. The standard describes the signal
characteristics to be used by each pin but
does not specify the kind of connector.
This produces some confusion.

The DB-25 connector which has 25 pins
has become the convention used with RS-232
cables. Also used is the DB-9 plug with
nine pins; for example, the QL and its
serial connector.

The Centronics parallel interface has
come to be the standard for printers, using
a 36-pin plug with 8 data lines conveying
one byte for each burst across the line.

The null modem is an RS-232 cable with
a couple of wires and pins swapped. It
fools a computer into thinking it's talking
to a modem when it's really just another
computer.

CATS anticipates archiving good
answers to the questions posed here in a
Sinclair data base. Retrieval can be
accomplished in the future, as appropriate.

QUESTION

Q: Do any of the Sinclair computers
have built-in interfaces for the various
peripherals?

A: About the closest thing is the
interface between the 2068 computer and the
2040 printer, and even this concept is
debatable. By and large, where Sinclair
interfaces exist, they are not recognized
by the rest of the computing world.

(QUESTIONS TO BE CONTINUED.)

**2nd Annual
Picnic in the Park**

SEPTEMBER 24, 11:00 AM

LAUREL PICNIC AREA

GREENBELT PARK

CATS 11 AUGUST

02X 08S: {505} 522-7081 F100 net
 15, node 6, East Coast dial {703}
 547-4815 F100 net 18, node 9.

{60 CLUB} >
 day night, 10 P.M. Eastern time
 Times SIG on CompuServe: Wednes-

Networks

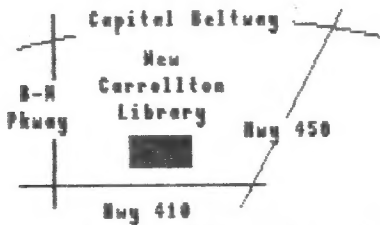
Memberships cost \$18 per year,
 are good for 12 months, and in-
 clude all privileges (access to
 libraries, group buys, etc.).
 A newsletter subscription only
 is available for \$12 per year.

Newsletter

Monthly meetings are held from
 11 AM to 4:30 PM, on the second
 Saturday of each month, at the
 New Carrollton Public Library.

Meetings

CATS Newsletter
 P.O. Box 467
 Fairfax Station, VA 22039



The next meeting of CATS will be held on:

Saturday, August 13, 1988 11:00 AM Hardware Workshop
 12:00 AM CYR Workshop 2:00 PM General Meeting

At: New Carrollton Public Library
 7414 Riverdale Road (Hwy 410), New Carrollton, MD

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